1 stepped pressure equilibrium code : verify

Contents

1.1 Brief

1. Supporting documentation.

1. On rational surfaces, where $\iota = n/m$, the straight fieldline poloidal angle is *not* unique.
2. To prove this, let $\tilde{\theta} = \theta + \delta_{m,n} \sin(m\theta - n\zeta)$ where θ satisfies the straight fieldline angle condition, $\mathbf{B} \cdot \nabla\theta = \iota \mathbf{B} \cdot \nabla\zeta$.
3. Then, $\mathbf{B} \cdot \nabla\tilde{\theta} = \mathbf{B} \cdot \nabla\theta + (m \mathbf{B} \cdot \nabla\theta - n \mathbf{B} \cdot \nabla\zeta)\, \delta_{m,n} \cos(m\theta - n\zeta)$, which reduces to $\mathbf{B} \cdot \nabla\tilde{\theta} = \iota \mathbf{B} \cdot \nabla\zeta$ if $\iota = n/m$.
4. If required, it is possible to define a 'preferred' straight fieldline angle on the rational surfaces as that angle which is smoothly connected to the straight fieldline angle on the infinitesimally-nearby irrational surfaces.

verify.h last modified on 2015-05-06 ;